

Frederick Lindemann, 1st Viscount Cherwell

Frederick Alexander Lindemann, 1st Viscount Cherwell, CH, PC, FRS^[1] (pronounced /ˈtʃɑːrwɛl/ *CHAR-well*; 5 April 1886 – 3 July 1957) was a British physicist and an influential scientific adviser to the British government from the early 1940s to the early 1950s, particularly to Winston Churchill. He advocated the "area" bombing or "strategic bombing" of German cities and civilian homes during the Second World War by falsely stating data to Winston Churchill from a study on the psychological impact of Germany's Birmingham Blitz and Hull Blitz on the local population.^[3] He also doubted the sophistication of Nazi Germany's radar technology and the existence of its "V" weapons programme.^[4]

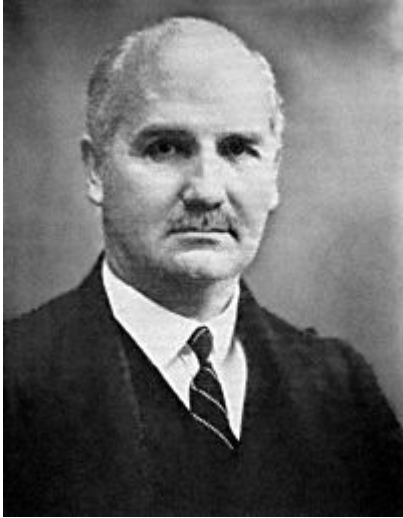
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Early life, family and personality

Lindemann was the second of three sons of Adolph Friedrich Lindemann, who had emigrated to the United Kingdom circa 1871^[5] and become naturalised.^[6] Frederick was born in Baden-Baden in Germany where his American mother Olga Noble, the widow of a wealthy banker, was taking "the cure".

The Right Honourable
The Viscount Cherwell
CH PC FRS



Paymaster General
<div><div>In office</div><div>1942–1945</div></div>
<div><div>Preceded by</div><div>Sir William Jowitt</div></div>
<div><div>Succeeded by</div><div>Vacant</div><div>Next holder Arthur Greenwood</div></div>
Paymaster General
<div><div>In office</div><div>1951–1953</div></div>
<div><div>Preceded by</div><div>The Lord Macdonald of Gwaenysgor</div></div>
<div><div>Succeeded by</div><div>The Earl of Selkirk</div></div>
Personal details
<div><div>Born</div><div>5 April 1886</div><div>Baden-Baden, Germany</div></div>
<div><div>Died</div><div>3 July 1957 (aged 71)</div></div>
<div><div>Alma mater</div><div>University of Berlin</div></div>
<div><div>Known for</div><div>"Dehousing" paper</div><div>Lindemann mechanism</div></div>

After schooling in Scotland and Darmstadt, he attended the University of Berlin. He carried out research in physics at the Sorbonne that confirmed theories, first put forward by Albert Einstein, on specific heats at very low temperatures.^[2] For this and other scientific work, Lindemann was elected a Fellow of the Royal Society in 1920.^[7]

Lindemann index

Lindemann melting criterion

In 1911 he was invited to the Solvay Conference on "Radiation and the Quanta" where he was the youngest attendee.

Lindemann was a teetotaler, non-smoker and a vegetarian, although Churchill would sometimes induce him to take a glass of brandy. He was an excellent pianist, and sufficiently able as a tennis player to compete at Wimbledon.^[8]

He was known to friends as "the Prof" in reference to his position at the University of Oxford, and as "Baron Berlin" to his many detractors because of his German accent and haughty aristocratic manner.^[9]

Lindemann believed that a small circle of the intelligent and the aristocratic should run the world, resulting in a peaceable and stable society, "led by supermen and served by helots."^[10] Some sources claim that he was Jewish,^{[11][12]} but Frederick Smith's biography and David Irving's second book on Churchill^[13] declare that he was not.^[14] Sometimes thought to be anti-democratic, insensitive and elitist, Lindemann supported eugenics and held the working class, homosexuals, and blacks in contempt and supported sterilisation of the mentally incompetent.^[15] He believed — Mukerjee concludes, referring to Lindemann's lecture on Eugenics — that Science could yield a race of humans blessed with 'the mental make-up of the worker bee'....At the lower end of the race and class spectrum, one could remove the ability to suffer or to feel ambition....Instead of subscribing to what he called 'the fetish of equality', Lindemann recommended that human differences should be accepted and indeed enhanced by means of science. It was no longer necessary, he wrote, to wait for 'the haphazard process of natural selection to ensure that the slow and heavy mind gravitates to the lowest form of activity.'^[10]

First World War and the University of Oxford

At the outbreak of the First World War, Lindemann was playing tennis in Germany and had to leave in haste to avoid internment. In 1915, he joined the staff of the Royal Aircraft Factory at Farnborough. He developed a mathematical theory of aircraft spin recovery, and later learned to fly so that he could test his ideas himself.^[1] Prior to Lindemann's work, a spinning aircraft was almost invariably unrecoverable and the result to the pilot fatal.

In 1919 Lindemann was appointed professor of experimental philosophy (physics) at the University of Oxford and director of the Clarendon Laboratory, largely on the recommendation of Henry Tizard who had been a colleague in Berlin.^[2] Also in 1919, he was one of the first people to suggest that in the solar wind particles of both polarities, protons as well as electrons, come from the Sun.^[16] He was probably not aware that Kristian Birkeland had made the same prediction three years earlier. At the same time he worked on the theory of specific heats and on temperature inversion in the stratosphere began to bring the two scientific disciplines together.^[17] In the field of chemical kinetics, he proposed the Lindemann mechanism in 1921 for unimolecular chemical reactions, and showed that the first step is one of bimolecular activation.^[17]

At the same time Churchill's wife Clementine partnered with Lindemann for a charity tennis match. Although the two men had very different lifestyles, they both excelled at a sport: (Churchill's was polo), and Lindemann's ability to explain scientific issues concisely, and his excellent flying skills, probably impressed Churchill, who had given up trying to earn a pilot's licence because of Clementine's grave concerns. They became close friends and remained so for 35 years, with Lindemann visiting Chartwell more than 100 times from 1925 to 1939.^[18] Lindemann opposed the General Strike of 1926, and mobilised the reluctant staff of the Clarendon to produce copies of Churchill's anti-strike newspaper, the British Gazette. Lindemann was also alarmed and fearful of political developments in Germany.^[2]

In the 1930s, Lindemann advised Winston Churchill when the latter was out of Government – the *Wilderness Years* – and leading a campaign for rearmament. He appointed to the Clarendon one of Churchill's social set that included the Mitfords and the Cavendish family, the young Welshman Derek Jackson. This brilliant young physicist, the son of Sir Charles Jackson, transferred from the Nobel prize-winning labs at Cambridge and worked on Lindemann's top secret nuclear energy projects.^[a]

Lindemann moved in rich circles at Biddesden, the Earl of Iveagh's home, hosted with literary luminaries Augustus John, Lytton Strachey, John Betjeman, Evelyn Waugh, the Carringtons and the Mitfords, the Sitwells and the Huxleys families. One frequently intoxicated visitor was a wayward Randolph Churchill.

In 1932, Lindemann joined Winston to complete a road trip throughout Europe and were dismayed at what they saw. Churchill later said, "A terrible process is astir. Germany is arming."^[19] Lindemann was prevailed upon to release Jackson in 1940 to join the RAF at Loughborough; he flew in the Battle of Britain and won a DFC. Lindemann also assisted the new Prime Minister in the rescue of a number of German Jewish physicists, primarily at the University of Göttingen, to emigrate to Britain supplementing the vital war work developing at the Clarendon Laboratory, including the Manhattan Project.^[1]

Churchill got Lindemann onto the "Committee for the Study of Aerial Defence" which under Sir Henry Tizard was putting its resources behind the development of radar. Lindemann's presence was disruptive, insisting instead that his own ideas of aerial mines and infra-red beams be given priority over radar. To resolve the situation the committee dissolved itself to reform as a new body without Lindemann.^[20] He stayed in close contact with the Jacksons at Rignell Farm, who enriched a poor wartime diet with dairy products they brought into Oxford themselves.^[21]

Second World War

When Churchill became Prime Minister, he appointed Lindemann as the British government's leading scientific adviser, with David Bensusan-Butt as his private secretary.^[22] Lindemann attended meetings of the War Cabinet, accompanied the prime minister on conferences abroad, and sent him an average of one missive a day. He saw Churchill almost daily for the duration of the war and wielded more influence than any other civilian adviser.^[10] He would hold this office again for the first two years of Churchill's peacetime administration (1951-5^[23]).

Lindemann established a special statistical branch, known as 'S-Branch', within the government, constituted from subject specialists, and reporting directly to Churchill. This branch scrutinised the performance of the regular ministries and prioritised the logistical machinery of warfare. S-Branch distilled thousands of sources of data into succinct charts and figures, so that the status of the nation's food supplies (for example) could be instantly evaluated. The bar charts now on display in the Cabinet War Rooms which compare allied shipping tonnage lost to new ships delivered each month and those comparing bomb tonnage dropped by Germany on Britain with that dropped by the allies on Germany each month are mute testaments to both the intellectual and the psychological power of his statistical presentations. Lindemann's statistical branch often caused tensions between government departments, but because it allowed Churchill to make quick decisions based on accurate data which directly affected the war effort, its importance should not be underestimated.^[2]



Lindemann, Churchill and Vice Admiral Phillips watching a demonstration at Holt, Norfolk

In 1940, Lindemann supported the experimental department MD1.^{[1][24]} He worked on hollow charge weapons, the sticky bomb and other new weapons. General Ismay, who supervised MD1, recalled:

Churchill used to say that the Prof's brain was a beautiful piece of mechanism, and the Prof did not dissent from that judgement. He seemed to have a poor opinion of the intellect of everyone with the exception of Lord Birkenhead, Mr Churchill and Professor Lindemann; and he had a special contempt for the bureaucrat and all his ways. The Ministry of Supply and the Ordnance Board were two of his pet aversions, and he derived a great deal of pleasure from forestalling them with new inventions. In his appointment as Personal Assistant to the Prime Minister no field of activity was closed to him. He was as obstinate as a mule, and unwilling to admit that there was any problem under the sun which he was not qualified to solve. He would write a memorandum on high strategy one day, and a thesis on egg production on the next. He seemed to try to give the impression of wanting to quarrel with everybody, and of preferring everyone's room to their company; but once he had accepted a man as a friend, he never failed him, and there are many of his war-time colleagues who will ever remember him with deep personal affection. He hated Hitler and all his works, and his contribution to Hitler's downfall in all sorts of odd ways was considerable.^[25]

With power, Lindemann was able to sideline Tizard; especially after Tizard did not acknowledge that the Germans were using radio navigation to bomb Britain.

Lindemann has been described as having "an almost pathological hatred for Nazi Germany, and an almost medieval desire for revenge was a part of his character".^[26] Fearing food shortages in Britain, he convinced Churchill to divert 56% of the UK merchant ships operating in the Indian Ocean over to the Atlantic, a move that added two million tons of wheat as well as raw materials for war fighting to Britain's stockpile. This meant that few ships would be available to carry wheat from Australia to India. Churchill's Ministry of War Transport warned that such dramatic cuts to shipping capacity in South East Asia would "portend violent changes and perhaps cataclysms in the seaborne trade of large numbers of countries" but the Ministry was ignored. The "menace of famine suddenly loomed up like a hydra-headed monster with a hundred clamouring mouths," according to C. B. A. Behrens in the official history of wartime British shipping.^[27] It has been estimated between 1.5 and 4 million people in Bengal died from famine,^{[28][29]} while Britain's stockpile of food and raw materials by the end of 1943 totalled 18.5 million tons, greater than ever before. Cherwell and Churchill's policies contributed heavily to the severity of the famine.^[30] Other British colonies on the Indian Ocean, including Kenya, Tanganyika and British Somaliland, suffered famine that year as well.^[27]

Strategic bombing

Following the Air Ministry Area bombing directive on 12 February 1942, Lindemann presented in a paper on "Dehousing" to Churchill on 30 March 1942, which calculated the effects of area bombardment by a massive bomber force of German cities to break the spirit of the people.^[31]

His proposal that "bombing must be directed to working class houses. Middle class houses have too much space round them, so are bound to waste bombs" changed accepted conventions of limiting civilian casualties in wartime."

His dehousing paper was criticised by many other scientific minds in government service who felt such a force would be a waste of resources.^[32] Lindemann's paper was based on the false premise that bombing could cause a breakdown in society^[33] but was used in support of Bomber Command's claim for resources.

Lindemann also played a key part in the battle of the beams, championing countermeasures to the Germans use of radio navigation to increase the precision of their bombing campaigns.^[2] However, he continuously obstructed and undermined the vital work of Sir Henry Tizard and his team who developed all important radar technology.

V-2 rocket

Lindemann also repeatedly made arguments against the rumoured existence of the V-2 rocket, asserting it was "a great hoax to distract our attention from some other weapon".^[34] He inaccurately concluded that "to put a four-thousand horsepower turbine in a twenty-inch space is lunacy: it couldn't be done, Mr. Lubbock" and that at the end of the war, the committee would find that the rocket was "a mare's nest".^[35]

Lindemann took the view that long-range military rockets were feasible only if they were propelled by solid fuels, and would accordingly need to be of enormous size. He repeatedly rejected arguments that relatively compact liquid fuels could be used to propel such weapons.^[36] In fairness, "Cherwell [Lindemann] had strong scientific grounds for doubting the forecasts that were being made of a 70–80 ton rocket with a 10 ton warhead."^[37] A pivotal exchange where Churchill rebuffed Lindemann occurred at the Cabinet Defence Committee (Operations) meeting on 29 June 1943 and was dramatised in the film *Operation Crossbow*.

Political career

Lindemann's political career was a result of his close friendship with Winston Churchill, who protected Lindemann from the many in Government he had snubbed and insulted. "Love me, love my dog, and if you don't love my dog, you damn well can't love me," Churchill reportedly said to a member of Parliament who had questioned his reliance on Lindemann, and later to the same MP Churchill added, "Don't you know that he is one of my oldest and greatest friends?".^[38]

In July 1941 Lindemann was raised to the peerage as **Baron Cherwell**, of Oxford in the County of Oxford.^[39] The following year he was made Paymaster-General by Churchill, an office he retained until 1945. In 1943 he was also sworn of the Privy Council.^[40] When Churchill returned as Prime Minister in 1951, Lindemann was once again appointed Paymaster-General, this time with a seat in the cabinet. He continued in this post until 1953.^[40] In 1956 he was made **Viscount Cherwell** of Oxford, in the County of Oxford.^[41]

Personal life

Despite his abrasive and Teutonic manner, Lindemann was reported to have a sensitive side, which reflected itself in his affection for animals and children. He was popular with women, but never married. He had no great loves, and few friends other than Churchill. Eventually he returned to his old rooms at Oxford. He died in his sleep on 3 July 1957, aged 71, only a year after becoming Viscount Cherwell, at which point the barony and viscountcy became extinct.^[42] He was the first and last Viscount Cherwell.^[43]

Honours

- 4 June 1941: Raised to the peerage as Baron Cherwell^[2]
- 1943: Appointed a Privy Counsellor^[2]
- 1953: Companion of Honour^[2]
- 1956: Created Viscount Cherwell^[2]
- 1956: Hughes Medal

See also

- Lindemann Building of the Clarendon Laboratory in Oxford
- Operation Biting - the Bruneval Raid (1942)
- [<http://revisionisthistory.com/episodes/15-the-prime-minister-and-the-prof> Malcolm Gladwell Revisionist History (podcast), "The Prime Minister and the Prof" report on history of Churchill, Lindemann, and historian Madhusree Mukerjee's review of their role in the Bengal famine of 1943 and Strategic bombing (Accessed 2017.07.17)
- The most powerful scientist ever (<https://www.scientificamerican.com/article/the-most-powerful-scientist-ever/>) Scientific American, Madhusree Mukerjee, August, 2010. Frederick Lindemann ended up wielding a great deal of power during Churchill's political career, affecting policy on matters well outside the purview of science.

Notes

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Political offices		
Preceded by <u>Sir William Jowitt</u>	<u>Paymaster-General</u> 1942–1945	Succeeded by <u>Vacant</u>
Preceded by <u>The Lord Macdonald of Gwaenysgor</u>	<u>Paymaster-General</u> 1951–1953	Succeeded by <u>The Earl of Selkirk</u>
Peerage of the United Kingdom		
New creation	<u>Viscount Cherwell</u> 1956–1957	Extinct
New creation	<u>Baron Cherwell</u> 1941–1957	Extinct

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